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of the Rear Area for Support of the Armed Forces in  
the Initial Period of a War", by Colonel-General  
F. Malykhin

1. Enclosed is a verbatim translation of an article which  
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*Richard Helms*  
RICHARD HELMS

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Original: The Director of Central Intelligence

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SUBJECT [REDACTED] MILITARY THOUGHT: "Some Problems in the Preparation of the Rear Area for Support of the Armed Forces in the Initial Period of a War", by Colonel-General F. Malykhin

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Following is a verbatim translation of an article entitled "Some Problems in the Preparation of the Rear Area for Support of the Armed Forces in the Initial Period of a War", written by Colonel-General F. Malykhin.

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Some Problems in the Preparation of the Rear Area for Support of  
the Armed Forces in the Initial Period of a War

by Colonel-General F. Malykhin

Fundamental changes in the nature of a future war require a basically new approach to the resolution of a series of highly important problems in the materiel-technical support of armed combat.

We have in mind, first of all, the problems of rear area support of all types of Armed Forces when missile troops have the leading role in the theaters of military operations and simultaneously, the fulfillment of missions for the protection of the zone of the interior and the groupings of the Armed Forces in the depth, from enemy strikes with weapons of mass destruction. In brief, we are discussing the necessity of developing special theoretical postulates concerning the utilization of those tremendous forces and means which will be made available by the State for the comprehensive rear area support of the Armed Forces at the beginning of a war.

In none of the previous wars was this problem so keen and urgent. Even during the period of the Second World War the attention of military leaders with respect to the rear area support of the Armed Forces was directed mainly at the delivery of allotted materiel-technical supplies to the fronts and to their proper utilization in the theaters of military operations. Moreover, the delivery of a significant part of the supplies to the consumers, i.e., to the distribution stations of the front, was carried out by elements of the national economy. Those supplies which were delivered to the central supply elements, could be delivered to the fronts in a planned manner by using the regularly operating transportation network of the country. The disruption of delivery plans by the enemy took place primarily in the rear areas of the front and in zones directly adjacent to them.

Completely different conditions for rear area support of the Armed Forces will prevail in modern warfare.

In delineating the conditions of work in the rear area of the Armed Forces, it is necessary to bear the following factors in mind above all:

- the necessity of simultaneous support of operations of fronts

in different theaters of military operations and of those groupings of the Armed Forces which are carrying out combat missions in the deep rear;

- the provision of reliable transportation networks for the rear area and for the front, and between theaters of military operations, for supplying fronts with everything necessary and for carrying out strategic and large operational regroupings;

- the difficulties of ensuring protection of the rear area of the Armed Forces from the means of mass destruction over the entire territory of the country.

In modern conditions the combat readiness of the Armed Forces, as never before, depends upon the timely preparation and stability of rear area support. For this reason the theoretical development and serious scientific investigation of problems of the rear area support of the Armed Forces at its present stage must be viewed as the most important tasks.

The modern rear services of the Armed Forces represent a huge organism which must be arranged in such a way as to support continuously, with minimum losses, the combat activity of fronts, the Antiaircraft Defense Troops of the Country; and reserves of the General Headquarters of the Supreme High Command in precise conformity with their missions and the situation.

By the rear services of the Armed Forces, in our opinion, one should understand both the forces and equipment included organizationally in the complement of the Armed Forces and those attached by the State to the jurisdiction of a military command for overall materiel, technical, and medical support and for the servicing of missile and ground troops, troops of antiaircraft defense of the country, and the air forces and the navy.

Depending upon the nature of the missions being fulfilled, conditions of work [1 or 2 words missing] and the organizational order, the forces and means of the rear area of the Armed Forces [are divided into the following] elements: troop, operational, and central.

[The troop element] is composed of rear services units and subunits, [2 or 3 words missing] materiel-technical supplies and property [2 or 3 words missing] of supporting the combat activity of large units [and units].

The operational element of the rear is composed organizationally of special organs of control of rear services large units, units, and installations of fronts, armies, fleets (flotillas); and PVO districts. It is designated for organization and implementation of measures for materiel, technical, and medical support of troops, preparation, restoration, and utilization of transportation routes, and other work in support of the combat activity of troops.

The central element of the rear services includes a large number of various large units, units, and installations, bases, depots, arsenals, repair plants, and other production enterprises of the Ministry of Defense designated for the rear services support of all the Armed Forces of the country (their various types), and at the same time constituting the reserve of the Supreme High Command and Commanders-in-chief of the types of Armed Forces.

The central organs of the rear services of the Armed Forces utilize the transportation network of the national economy in accordance with the full needs of the Armed Forces, and also the forces and means of State reserves and the mobilization potential of industry prepared during peacetime and assigned to their jurisdiction by special government decrees.

[2 or 3 words missing] in the preparation of the rear services of the Armed Forces for warfare is extremely large. In this article we shall endeavour to set forth our point of view only on the most important problems, having, in our opinion, primary significance for fulfilling practical missions of preparation of the rear services for the support of the Armed Forces in the initial period of a war.

In these problems we refer first of all to the changing role of stocks of materiel, determination of their size and principles of their echelonment, the preparation of communication routes, and means of transport, and problems of developing new forms of control of the rear services of the Armed Forces.

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With the growth in size of armies, adoption of new, more sophisticated means of armed combat, increase in offensive tempos, and the intensity of defensive engagements, the materiel requirements of the troops increase correspondingly. During the First World War the Russian Army expended about one million tons of ammunition and a total of several tens of thousands of tons of fuel. During the period of the Second

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World War the total expenditure of ammunition by the Soviet Armed Forces comprised about 8 million tons, and fuel - more than 13 million tons.

The materiel expenditures of the Armed Forces in a future war apparently will increase even more. The high level of technical outfitting of the Armed Forces has caused a significant increase in the estimated units of supply expressed in weight. Thus, the weight of a unit of fire of a modern front (without aviation) currently amounts to 18.5 thousand tons, and fuel servicing exceeds 22 thousand tons. Calculations indicate that for 8 to 10 calendar days of an offensive operation, developing speeds of 80 to 100 km in a calendar day, and for the period of its preparation, the troops of a front may expend upwards of 240 thousand tons of fuel and about 120 thousand tons of various ammunition. To this should be added the probability of increased combat losses from weapons of mass destruction. It follows that the quantitative growth of materiel expenditures conforms to an objective law.

Along with the quantitative changes in modern conditions, as a result of equipping the Armed Forces with new types of arms, great qualitative changes in materiel requirements have taken place. A future war will be a nuclear/missile war, in which the decisive type of Armed Forces will be missile troops of strategic designation, and the basis of the firepower of each of the types of Armed Forces will be their missile weapons. In connection with this, the supply of troops with missiles, missile fuel, and other special materiel for missile troops acquires primary significance. The need, however, for conventional types of ammunition, especially for tube artillery and aircraft bombs, is decreasing significantly at the present time. Speaking of the decrease of the needs of the troops for these types of ammunition, we are basing it on the fact that fire preparation and the support of operations during broad use of nuclear/missile weapons will undergo great changes. An offensive will be carried out at great speeds with broad utilization of nuclear weapons. Nuclear/missile weapons will also form the basis of defensive fire.

No less serious qualitative changes have also taken place in the fuel requirements of the Armed Forces. The proportion of aviation fuel in the total expenditure of fuel has significantly decreased, with a simultaneous colossal growth in the fuel requirement of ground equipment. The supply of troops with missile fuel has acquired the greatest significance.

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Serious qualitative changes in the requirements of the Armed Forces also arise from their increased technical outfitting.

In a future war, much very complex equipment will be used. For this reason one of the main missions of the rear services is the uninterrupted supply of the Armed Forces with technical equipment for the use, repair, and servicing of nuclear, missile, and radioelectronic equipment, tanks, motor vehicles, and other materiel.

While, during the Second World War, this equipment comprised altogether only 8 to 10 percent of the weight of expended ammunition, fuel, and rations, its present proportion has grown to 20 to 25 percent.

The preceding statements permit the conclusion that under modern conditions the basic types of materiel supplies for support of the Armed Forces may be considered to be: missiles and assorted nuclear ammunition, missile fuel, artillery ammunition, fuel for ground equipment and aircraft, technical equipment, and rations.

The uninterrupted support of troops with these types of materiel supplies as the first priority in modern conditions is one of the chief factors in their high combat readiness, and depends upon the status of the supplies and accumulated stocks in case of a war.

In our time the significance of materiel supplies has grown immeasurably.

The role and size of stocks depends first of all on the volume of materiel expenditures, the urgency with which needs may arise, and the capacity of the transportation system to guarantee uninterrupted delivery of freight from the place of production to the consumers. Under modern conditions, with increased requirements for materiel supplies and the great vulnerability of the routes of communication and transportation, guaranteeing the uninterrupted flow of goods will be extremely difficult, and in certain instances altogether impossible. Namely for this reason, stocks of materiel supplies created in advance in all elements of the Armed Forces will, as never before, be essential for guaranteeing the constant combat readiness of troops. This is especially important for guaranteeing the strategic deployment of the Armed Forces and conduct of operations during the initial period of a war, when industry will only be converting to military production, the transportation network will be occupied mainly with movements for the concentration of troops, and in a number of areas may be disrupted by the first massive nuclear/missile strikes of the enemy.

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Arguments are now in process concerning the size and order of echelonment of stocks created in peacetime. Certain comrades advise maximum reduction of stocks with the aim of supposedly easing the burden of troops further. We are against such an approach to the resolution of this important problem.

The correct determination of the essential scale of materiel stocks accumulated in advance has been a subject of special concern to governments, general staffs, and the rear services elements of their armed forces throughout the course of the entire history of warfare.

In our opinion, during the development of plans for the rear services support of the Armed Forces in the initial period of a modern war, careful consideration should be given such factors as:

- the strategic goals facing the armed forces along strategic axes (theaters of military operations);
- the total volume of materiel requirements [1 or 2 words missing] of the Armed Forces;
- the probable period of conversion of current production to military needs;
- the degree of preparation of the transportation system of the country for uninterrupted work in carrying out planned movements of troops and bringing up of materiel supplies under conditions of the initial nuclear/missile strikes;
- the economic potentialities of the country (of the combined countries), and the state of combat equipment development (the possibility of rapid obsolescence of accumulated ammunition, technical, and other supplies).

On the basis of the experience of the last war, and after consideration of the postwar changes of the factors indicated above, we assume that, in preparation for war, it is essential to create stocks of materiel in advance directly within the troops, with the armies and fronts planned for deployment, and under the jurisdiction of the central organ of the rear services of the Armed Forces. We consider the following to be the optimum sizes of these stocks applicable to the western axis:

- general stocks of deployed fronts (mobile - troop, army, and front) calculated on the monthly requirement of the troops;

- supplies of the central organ of the rear services, calculated on the three-month requirements of all the Armed Forces of the country, taking mobilization buildup into account.

When determining the size of the stocks, which are eligible for prior creation and regular maintenance within the troops, in army and district depots (depots of groups of troops), we proceed from the fact that in the first 20 to 25 calendar days after the initiation of war, the main types of transport will be converted primarily to operational movements of troops for supporting strategic concentration and deployment of future fronts.<sup>1</sup> On overland communication routes a large number of barriers and centers of persistent contamination will be formed. A portion of the peacetime stocks will be subject to contamination or will be annihilated by the initial nuclear strikes of the enemy. For this reason the delivery of materiel supplies during the course of the first and even partly during the second offensive operation of the front will be extremely difficult. In volume it apparently will not exceed 25 to 30 percent of the monthly requirements of the troops, which might cover only the combat losses and form some reserve for supporting the combat effectiveness of troops until the moment of establishment of a system of uninterrupted supply of the operating army for the delivery of everything necessary from the depots and bases of the center.

In the determination of the size of stocks, which it is feasible to accumulate in advance and maintain at central bases, taking into account all the above-listed factors, we took as a base the time necessary for the buildup of the mobilization potential and for the conversion of industry to war production.

As is known, three months were required during the last world war for the conversion of industry to the military needs of our country, during the course of which bases for production of combat equipment and various military materiel were created in interior areas. Already

1. The period of the most intensive operational movements on railroads of the USSR at the beginning of the Second World War lasted for about a month. During this time the volume of supply movements was very low. During the first 10 days of mobilization it made up altogether only 10 percent of the total volume of military railway movements.

in October-November 1941, our Armed Forces began to receive regularly everything necessary for combat and life from current production. It is this very period that we are taking into account, proposing minimum quantities of supplies at the center for supporting the Armed Forces at the beginning of a future war.

We may hear objections, that the last war was started with extremely disadvantageous conditions of enemy superiority; the organization of military production in the summer of 1941 was combined with the evacuation of a large number of enterprises to the East; in addition to this, our supply organs did not have sufficient practical experience in the fulfillment of these complex missions, etc.

All this, undoubtedly, should be considered. However, it is impossible to overlook the new difficulties connected with the enemy capability of carrying out nuclear/missile strikes against important economic centers over the entire territory of the country. For this reason we take into consideration the potential possibility of annihilation, or heavy destruction, of a number of enterprises and bases and, consequently, also, a substantial decrease in mobilization potential and State reserves in the first days of a war.

Under modern conditions, with the great vulnerability of the lines of communication, the correct determination of the echelonment of stocks of materiel supplies will have exceptionally important significance. The accepted order of echelonment and location of stocks has direct influence on the creation of conditions of autonomy and independence of troop operations and on the viability of the system of rear area support during widespread utilization of weapons of mass destruction.

We consider that for a deploying front, as regards a western axis, stocks should be echeloned in the following order:

- with the troops (in regimental and divisional depots) - mobile stocks on motor vehicles in amounts required by the troops for three or four calendar days of medium intensity combat;
- in army depots - similarly mobile stocks for two calendar days;
- in front depots (of military districts, groups of troops) for 20-25 calendar days requirements of the grouping being supported.

A modern division is a highly mobile, fully mechanized large unit, capable of engaging in combat under complex conditions, along an

independent axis, as a landing force, etc. For this reason it is very important to create definite conditions of autonomy for the division, opportunities to conduct combat while cut off from bases of supply, with broken communication lines, and in other instances of complex combat situations. In the interests of easing the burden of the division, during the last years its rear services have been significantly decreased and stocks of materiel supplies have been substantially lowered. Further decrease of stocks in the division, in our opinion, is already impossible. As long as the basic means of transport continues to be land transportation, based on highly vulnerable routes of communication, the lowering of the mobile stocks below the level of three to four calendar day requirements of the division will inevitably harm the combat effectiveness of the troops. This pertains especially to fuel, without which modern, fully mechanized troops may become immobile targets for the enemy.

It is known that the expenditure of fuel during a calendar day when the speed of the offensive is 80 to 100 km may amount to: diesel fuel for heavy tanks, 1.3 fuelings, and for medium tanks, 0.7 fuelings; aviation gasoline for armored carriers, 0.7 fuelings, motor vehicle gasoline for combat and transport vehicles, 0.45 fuelings. If with such expenditure the divisional supply of diesel fuel drops to two fuelings, and aviation and other gasoline to 1.25 fuelings, then in case of disruption of transport, the troops will not be able to continue the fulfillment of their combat missions after one and a half to two calendar days.

For this reason we categorically object to those who, viewing the idea of easing the burden of the troops as a goal in itself, recommend lowering the fuel stocks in a division to one and a half to two calendar day requirements.

We consider that the very minimum mobile stocks of fuel in a division must be: motor vehicle gasoline - 1.4 fuelings, diesel fuel - 2.5 fuelings.<sup>1</sup>

The combined-arms and tank armies, under modern conditions, form the basis of both operational internal and operational interfrontal maneuver. For this reason, it is extremely essential to have at the

1. All fuel calculations were carried out on the basis that motor vehicles have a cruising range of 500 km, and for tanks, taking into consideration the fuel in all fuel tanks making up the fuel system of tanks.

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disposal of the army commander at least minimal reserves of materiel supplies for operational influence on sharp and unexpected changes in the situation. Such a reserve is proposed by us for a combined-arms army on the scale of troop requirements for two calendar days, and for a tank army - for one calendar day.

In connection with such a lowering of stocks with the troops and at mobile army bases, as well as in connection with the significant decrease of other forces and materiel of these elements of the rear services, there has appeared a necessity to alter the echelonment of stocks of a front. In the interests of bringing these stocks nearer to the troops supported, we consider that up to 60 percent of them should be maintained in forward bases of the front, which, with great strain on the communication lines, can move their sections forward. The remaining 40 percent of the stocks of the front may be kept in rear area bases of the front for the regular replenishing of forward bases, for deliveries by air transport to armies, and for the direct support of troops carrying out missions in the depth of the rear area.

Such a system of stocks echelonment in the zone of operations of the front, in our opinion, more readily satisfies the requirements of uninterrupted support of troops under the complex conditions of modern operations.

Certain comrades consider that in order to avoid unnecessary transshipment, bases should not be formed in the deep rear area of a front. Thus, for example, it is proposed to have one front missile-technical base with two sections, which must deploy in an area along a 200 to 250 km front and 100 to 150 km in depth. Such a scheme, seemingly very simple at first glance, may become, in actual conditions, very complex, and will not guarantee the fulfillment of assigned missions. It does not satisfy the requirements of maximum dispersion, stability of supply during the sudden appearance of barriers on lines of communication, and hinders support of missile large units deployed in the depth of the rear area.

In view of the great vulnerability of rear area lines of communication, remoteness of theaters of military operations, and the long-range ability of modern means of attack, the problem of correct echelonment of stocks of the central organ of the rear services of the Armed Forces has arisen sharply at the present time.

The investigation of this problem leads to the conclusion that

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in our time the stocks of the center should be maintained in two echelons: in the border zone and in the zone of interior. By the border zone, we mean the groups of our troops located on the territory of countries of the Peoples' Democracies, the territory of Warsaw Pact countries contiguous with our borders, and, for military districts, the border areas of the USSR.

The moving out of bases of the center on the Western axis beyond our borders, with the moving of stocks nearer to troops supported, will permit us in initial operations to avoid dependence on vulnerable railroad meeting points of Soviet and European gauges.

During the echelonment of stocks in border areas, their distribution along the axes of probable troop operations must also be provided for, taking into consideration requirements of groupings of the Armed Forces for materiel stocks along a particular axis.

Altogether in the bases of the center in the border zone, there should be 50 to 60 percent of the total volume of stocks of the center which are accumulated ahead of time. It is advisable to create the remaining portion (50 to 40 percent) in the zone of interior, located in scattered places sheltered from nuclear/missile strikes of the enemy. These stocks will be utilized to support the full mobilization of the Armed Forces, troop operations of the antiaircraft defense of the country, missile troops of strategic designation, and other groupings fulfilling combat missions in the zone of interior.

During the distribution of stocks created ahead of time, special attention should be given to their preservation during enemy attack with weapons of mass destruction. The preservation of troop and army stocks is assured chiefly by the mobility of bases and depots. Insofar as the stocks of the front and bases of the center are concerned, in the interests of great security, they should be located at an appropriate distance from probable targets of nuclear strikes, in sheltered places and carefully concealed. Unfortunately, at the present time this vital principal is a long way from being observed everywhere.

It appears to us, that we should not be carried away with the creation of large bases, the sheltering and concealment of which would require huge resources. It is considerably more advantageous to create smaller bases, to spread them over a larger territory, and place them at a distance from possible targets of enemy nuclear/missile strikes.

The stocks of materiel supplies of the center need not be located

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only in bases under the jurisdiction of the military command. A portion of these stocks may also be located in bases of State materiel reserves, but which are earmarked even in peacetime for support of troops in the initial period of a war. The military command must take part in the determination of the size and points for locating these stocks. The stocks of the center must be constantly kept prepared for movement, and ramps and approach routes must be prepared in advance on the various fronts for all types of transport.

Under modern conditions large shipments of materiel supplies, from the central bases and depots, can be accomplished by air transport, so it is very important to have a prepared network of airfields in the area of these bases, approaches to them, transportation for bringing up freight to the airfields, and also a labor force with loading-unloading equipment.

Such preparation has special significance for missile bases, dumps of missile fuels, and special articles (izdeliye), belonging to the armament of missile troops. The most advantageous way to move materiel supplies of this type will be over great distances from the deep rear directly to the points of their utilization.

Thus, the most important problem of supporting troops in the initial period of a war and during the strategic deployment of the Armed Forces is the accumulation of the required stocks of materiel supplies ahead of time, their proper location and echelonment, and their reliable protection from enemy strikes. The timely and purposeful resolution of this problem will form the most important materiel basis for armed conflict in the initial period of a future war. This will also reflect, to a significant degree, upon the successes of our Armed Forces during the subsequent course of the war.

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The conditions for conduct of armed combat in a future war bring up a series of new, highly important problems in the realm of preparation of communication lines and means of transport.

In the interests of assuring the required viability of the rail and motor vehicle roads which form the basis of the transportation system in internal areas and in the prefrontal zone, it is essential, still in peacetime, to carry out a number of important measures.

Among these measures are the following, above all:

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- the development of a network of roads on the required strategic and operational axes;
- the construction of deep and local bypasses of large junctions, administrative-political, and industrial-economic centers;
- the preparation of alternate crossings over water obstacles;
- the preparation of modern types of transport.

In the postwar period our country has significantly broadened the program of construction of lines of communication.

A large measure of capital investment is directed toward the fulfilment of these missions. With the goal of looking after the interests of the Armed Forces, the appropriate elements of the Ministry of Defense must very vigorously place before the planning elements of the national economy the missions for ensuring dependable communication lines for the vitally important strategic axes which run through economically less-developed areas of the territory of the country. These very important measures must be given foremost attention by State planning organs, as well as by organs of the Ministry of Defense.

We consider one of the most important problems in the preparation of the rear services of the Armed Forces for war to be the long-range development of a network of communication lines in precise conformity with strategic plans being developed for the conduct of armed combat.

Under conditions of a modern nuclear/missile war, when the stability of the operation of networks of communication lines in internal areas of the country becomes the most important factor in the maneuvering of armed forces and in ensuring the fulfilment of strategic missions by them, views on the preparation of communication routes for operation in wartime change radically. At present the mission of constructing deep and local (depending upon the importance of the target) bypasses of centers of communication routes, large stations, transshipping, and other narrow points and sectors, as well as bypasses of large administrative and industrial centers; should be pushed to the fore. Only by having such bypasses prepared ahead of time is it possible to count on assuring uninterrupted operation of transport by rapid transfer of the flow of trains and motor vehicle march columns to alternate routes or to adjacent axes.

It is no less important to carry out preparatory measures ahead of time, ensuring uninterrupted military movements across large water

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barriers. In our opinion, the resolution of this problem may be achieved by implementation of a complex of various measures. Of these, we must first of all mention the construction of main alternate bridges, the cutting and filling of roadbeds, and also in certain instances, the laying of load-bearing surfaces on the approaches to points where temporary alternate crossings are being erected. To shorten the periods for reestablishment of traffic in cases of destruction of bridges by the enemy, it is essential, already at the present time, to develop broadly the procurement and accumulation of stocks of materials for erecting floating rail and motor vehicle bridges and ferry crossings. In addition, it is essential to have such materials directly under the control of the Ministry of Defense for concentration along the most important operational axes, as well as under the jurisdiction of the Ministry of Transport Construction for maintenance of rear area roads where barriers are most likely to occur. In the fulfillment of this mission, a significant reserve for the decrease of capital investment may be the adaptation of floating river equipment for the erection of temporary floating rail and motor vehicle bridges and ferry crossings. In terms of capacity of the river tug fleet and freight-carrying capacity of the towed fleet in river basins, the Soviet Union at the present time occupies first place in Europe and second in the world. This fleet is growing rapidly. During the period from 1951 to 1958 alone, the freight-carrying capacity of the self-propelled and towed river fleets increased by more than 3.5 million tons.

In the makeup of the river fleet there is a large number of barge-lighters with a freight-carrying capacity of 300-2000 tons, open double-bottomed metal barges with freight-carrying capacities of 1800-3000 tons, and other cargo vessels, entirely suitable for rapid erection of floating bridges of any length. For the rational utilization of this reserve and appropriate preparation of vessels, it appears essential to develop their fixed tonnage for series production and to achieve the introduction of certain design changes, especially in the superstructure.

Closely related to the resolution of the problems listed is the need to organize vigorous protection of major transport installations from the means of enemy attack (allotment of antiaircraft defense means). It is extremely essential at the initiation of military operations to screen basic installations (large centers on main lines of strategic designation, rail meeting points of Soviet and West European gauges, large bridges) reliably with antimissile and antiaircraft weapons. It appears to us that this problem must be worked out beforehand by the joint efforts of elements of PVO Troops of the Country and the rear services

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of the Armed Forces.

In the resolution of problems concerning the stability of the system of the rear services support of the Armed Forces and the strategic maneuvering of troops under modern conditions, the continuity of the transportation process has very important significance. At the present time a portion of our Armed Forces along the western axis are located beyond the territorial limits of the USSR. For this reason we must closely tie in the execution of all missions connected with the preparation of networks of communication lines and means of transport on our territory with analogous measures carried out on the networks of communication lines of adjacent countries. This pertains especially to the readiness of rail and motor vehicle roads, as well as to sea transport in maritime theaters of military operations.

Modern warfare creates such difficulties in the organization of troop transport that the fulfilment of these missions can be achieved only under conditions of combined utilization of all types of transport. Even in the last war, depending on conditions, various types of transportation were utilized. Under modern conditions the necessity of our intensive and cooperative operation of the various types of transport has increased even more. For this reason the preparation of communication routes and means of transport for operation in war-time should be carried out at once, proceeding precisely from the problem of their combined utilization.

Let us examine in somewhat more detail the possibilities of utilizing measures for the preparation of each of the types of transport.

Rail Transport. The utilization of railroads in a future war will depend on the conditions of the theater of military operations, the density of networks and other factors mentioned above. If we take the Western Theater of Military Operations, then within its limits, on the territory of countries of the Socialist Camp, the density of railroad networks is 9.2 km per 100 square km, and in capitalist countries it reaches 10.7 km. Such a density of railroads in this theater of military operations, even under conditions of the use of nuclear missile weapons, permits hope of the possibility of carrying out a significant volume of military railroad shipments within the confines of the rear areas of fronts deploying there and in the prefrontal zone. Railroad transport in the internal areas of our country will play a basic role in the total volume of shipments when it is prepared beforehand.

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An extremely complicated mission for the rear services of the Armed Forces will be ensuring continuity of the transportation process from the centers of production (bases) to consumers. In the fulfillment of this mission, we must emphasize, above all, such measures as ensuring dependable operation at the meeting points of railroads of Soviet and West European gauges, and the organization of transloading operations at points where barriers have resulted from enemy strikes (in the destruction of bridge crossings over large water lines and railroad tunnel sectors).

For ensuring uninterrupted supply of our Armed Forces operating in the period of the Second World War on the territory of European countries, along our Western borders were organized ten transloading areas, and a large number of transloading stations were set up.

Such a fundamental system of transloading areas may also be adopted in a future war, but it must be organized with consideration of the new conditions of nuclear/missile war. Each transloading area at the meeting points of railroads of Soviet and West European gauges is a huge military installation and a huge installation of the national economy. It must include several stations with sectors of deep extensions of railroad lines of various gauges, a branching network of motor vehicle roads and pipelines, a communications system, a large quantity of loading-unloading equipment, and specially prepared places for changing the trucks of the rolling stock, as well as transloading bases with depots and means for transporting freight. The degree of prior preparation of transloading areas for operations under conditions of a nuclear/missile war will render a decisive influence on the feasibility of maintaining uninterrupted delivery of materiel supplies from the zone of interior to the distributing stations of the fronts.

Sometimes proposals are introduced to reject transloading areas and to resort, at the initiation of a war, to the altering of gauges of West European lines to Soviet gauges. In the period of the Second World War it was not uncommon to resort to such a measure. Thus, in the zones of operation of the Belorussian and the First Ukrainian fronts, to the line of the Vistula River, most of the railroad lines were altered; later the following main lines were fully altered: Kaunas-Insterburg-Koenigsberg-Marienburg; Bialystok-Pluszcz-Ostrolenks-Deutsch-Eylau; Brest-Warsaw-Poznan-Berlin-Lvov-Przemysl-Krakow-Katowice-Breslau. Experience showed that to rely upon the alteration of basic

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main lines is not advisable. This must be resorted to only in exceptional cases, in individual secondary sectors. The alteration of basic main lines may lead to broad gauge lines' cutting the entire network of railroads of European countries into isolated areas, and this will drastically limit the utilization of local transport in rear areas of the fronts and in the prefrontal zone. Along with this there will be insufficient native rolling stock and locomotives in the event of a sharp increase in the length of the network, and it will be impossible to utilize West European gauge rolling stock. Besides, the smaller dimensions of the auxiliary structures on West European gauge railroad lines would make it more difficult to utilize our rolling stock, especially in the organization of two-way traffic on two-way bridges and tunnels. In connection with this we consider it more advantageous to concentrate on ensuring the stable operation of a diversified network of transloading areas at meeting points of railroads of different gauges.

A new and extremely complex problem in ensuring the continuity of transport networks between the front and the rear will be the organization of the surmounting of obstructed places along railroad lines, especially in the internal areas of the country. The most rational form for organizing this operation appears to be the creation of temporary transloading areas (vremennyy peregruzochnyy rayon -- VPR). In the composition of the VPR it is essential to have various special railroad formations, as well as motor vehicle, road, pipeline, loading-unloading, and other equipment. The basic mission of the temporary transloading areas must be the ensuring of continuity in the flow of freight without a substantial decrease in the tempo of shipments during the surmounting of obstructed places until through railroad traffic is restored.

We consider that such organizations should be provided for in the mobilization plans of railroads for operations on railroads of internal areas of the country. To support transloading at water barriers, as well as at tunnel sectors of railroads on the territory of Western countries (outside the borders of operating fronts), it is essential to have rather strong reserves of this equipment which could be moved up to an area where needed in a short period of time.

It is expedient to have mobile formations of temporary transloading areas in the reserve of the rear services of the Armed Forces for aiding fronts to surmount obstructed places.

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The volume of reconstruction work on railroads in a future war will significantly exceed the work carried out during the period of the Second World War.

Taking this into account, it is essential to begin serious work on preparation for the restoration of internal railroads and those in the prefrontal zone. In the complex of preparatory work, primary significance is attached to the creation and training of special formations, the prior creation of stocks of repair-reconstruction materials, and others. All these problems in internal areas of the country will be resolved by elements of the transport ministries. However, it is essential for us to submit our requirements now and participate in the measures which are being carried out.

More intensive conversion to diesel-electric traction takes on special significance for railroad rolling stock, will increase significantly the transport capacity of railroads, and will facilitate reconstruction operations. A significant increase must be obtained in the proportion in the car park of large-capacity flatcars and tank cars for the transport of petroleum products. It is extremely essential to create, in the near future, a sufficient park of special cars and flatcars for the transport of missiles and missile equipment, and also tank cars for the transport of the components of liquid missile fuel. The problem of creating a sufficient park of trucks and steam locomotives of West European gauge which may be utilized for movement from transloading areas along railroads of West European gauge in the first days of a war, acquires great significance.

Water transport in maritime theaters of military operations and when there are internal water routes along the axes of combat operations, and in the zone of interior, will carry out a significant volume of troop transport, especially the transport of supplies.

For the preparation of water transport, the problems of organization of transloading areas and outfitting them with equipment capable of carrying out rapid transloading of armaments and all types of supplies from an unequipped shore to vessels anchored in the roadstead and vice versa, should be decided beforehand. It is necessary to carry out scientific-research and experimental design work for the creation of special equipment of sea-going river vessels for the transport of modern types of weapons and ammunition and the development of transloading equipment on board the vessels.

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For the maintenance of water communication routes in a state of constant usability, it will be necessary to create special formations.

In our opinion, it is expedient to have a part of the vessels in the composition of the naval fleets and flotillas adapted so that they are capable of operating at sea and on large river waterways. This will make it possible, in many instances, to avoid the rather difficult operations of carrying out transloading work in roadsteads.

Motor vehicle roads and motor vehicle transport deliveries played a large role in carrying out transport of troops and supplies within a front already during the past war. There were also frequent instances when motor vehicle transport was utilized for delivery of materiel supplies to the fronts in accordance with the plans of the central elements of the rear area, and for urgent transport of personnel replacements. Thus, in 1942 the vehicle park of the Reserve of the Supreme High Command (RVGK) transported up to 1.3 million tons of various freight to the fronts, and altogether for 10 months of 1943 - about 1.4 million tons of freight and 130 thousand personnel replacements.

In connection with the large volume of motor vehicle shipments of the center in the 1941 to 1943 period, the following special military motor vehicle roads of the center were prepared and serviced: Gorkiy-to-Moscow, Moscow-to-Leningrad, Moscow-to-Volokolamsk, Moscow-to-Mozhaysk, Moscow-to-Yukhnov, and others. During the final stage of the war the Moscow-to-Warsaw-to-Berlin highway was in operation.

In modern conditions it is most probable that there will be, not periodic, but constant use of motor vehicle transport along the entire extent of the basic axis from the zone of interior to the operating fronts. Motor vehicle transport will not only have to supplement or duplicate railroad transport, but during a certain period will fully replace it along individual axes.

In modern conditions large motor vehicle highways will be utilized not only for delivery of materiel supplies, but chiefly for the movement of troops in motor vehicles and by mechanized traction, reserves, and all types of replacements. For this reason the role of motor vehicle roads is now growing and qualitatively changing.

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In connection with this the problem of development of a network of hard-surfaced motor vehicle roads arises sharply. In addition, it is necessary to strive to improve correspondingly the transportability and passability of motor vehicle roads on our territory and on the territory of countries of the Socialist Camp allied with us. In an adverse situation the holding up of motor vehicle transport in narrow places and delay in the flow of freight will be unavoidable.

The intensive transport traffic, and enemy actions against important installations of basic motor vehicle communication routes demands the carrying out of serious measures for their maintenance in usable condition and their reconstruction. We suppose, that during the first days of the war the basic motor vehicle highways of the center must be serviced by special road-reconstruction and maintenance formations, which must be capable of carrying out work of technical concealment, reconstruction, and maintenance of the rear area motor vehicle roads.

In the interests of ensuring a high degree of readiness of the road service for operations in the initial period of a war, it appears expedient to carry out large-scale preparatory work in peacetime, taking into consideration the utilization of all forces and means of the military establishment as well as civilian organizations.

A special role in the preparation of military motor vehicle roads will be played by such measures as prior buildup of stocks of construction-repair materials, the procurement and concentration, in necessary locations, of spare structural components for reconstruction of auxiliary structures, the preparation and proper setting-up in peacetime of civilian road organizations equipped with machinery, the development of bypasses of the most vulnerable places, etc.

The motor vehicle park of our country has grown significantly during the postwar period, and is more than 80 percent modernized by the receipt of more highly perfected motor vehicles. For equipping the Soviet Army, especially the motor vehicle transport large units and units of central subordination, there will appear, in ever increasing quantities, larger freight-capacity motor vehicles with large trailers, semitrailers with independent transmissions, and motor vehicle trains. The introduction of this equipment will permit a sharp increase in the freight capacity of transport units and large units and will significantly decrease loading-unloading operations. From this it follows that it is essential for us to

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submit, in a timely manner, the military requirements for newly designed models of motor vehicle equipment, in order that during mobilization the motor vehicle park of the national economy might, with great effectiveness, be utilized in all elements of the rear services of the Armed Forces in wartime.

A task which cannot be postponed is the development within the system of the Ministry of Defense of essential types of motor vehicles, semitrailers, and motor vehicle trains for transport of all types of missiles, missile fuels, and other special freight for supporting missile troops. Here we are speaking of special motor vehicle transport suitable for operations in the central element of transport.

Pipeline transport is an economical, high-capacity method of fuel transport that has low vulnerability. These positive qualities of pipeline transport are extremely important for the creation of a stable system of supporting modern mechanized Armed Forces in wartime. In the Soviet Union and the countries of the Socialist Camp friendly to us, the network of pipelines is increasing from year to year. At the present time a large program for the development of permanent pipelines is being planned. The Seven-Year Plan for developing the national economy of the USSR provides for the construction of new petroleum and petroleum product pipelines, which will ensure an almost three-fold increase in the length of the main pipelines. Together with this, the construction of the petroleum pipeline from the Trans-Volga region through Bryansk, with branches to the borders of Czechoslovakia and Poland, which has been started, will have special significance not only for the national economy but also for supplying the Armed Forces in the European theaters of military operations with fuel.

In modern conditions it appears extremely essential to force the construction of pipelines within the framework of the Council for Mutual Economic Aid (CEMA), to achieve the uniting of the basic main lines and local petroleum pipelines into a single network of the countries of the Peoples Democracies. The stability of the support of the Armed Forces in theaters of military operations may substantially facilitate the creation of a system of field main pipelines as an extension of permanent lines. For this reason we consider that the development in every possible way of the production of field pipeline equipment with a pipe diameter of 150 mm has good prospects. Systems of such

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pipelines with a 24-hour delivery capacity of each line of 2,000-2,400 tons, must guarantee the delivery of basic types of fuel, without overloading, to a depth of 600 km and more from the terminals of permanent pipelines or from operating sectors of railroads.

Air transport, even in the last war, in various instances, played an important role in the transport of troops and their materiel support. It is sufficient to indicate that the forces of the Civil Air Fleet and Long Range Aviation, based upon incomplete data for the period of the war, transported over 300 thousand tons of freight and more than 1.5 million personnel.

Air transport during the period of the Second World War was utilized primarily centrally in the capacity of a resource of the Supreme High Command. However, even during that period there were instances of temporary assignment of certain units of transport aviation to the fronts. Thus, out of the 228 transport aircraft in the Far Eastern Theater of Military Operations during the summer of 1945, 189 were detached for the servicing of the Transbaykal Front. During the time of preparation and conduct of the operation by this front, about 16.5 thousand soldiers and officers, up to 2.8 thousand tons of fuel, and 2 thousand tons of miscellaneous freight were moved by air transport.

In view of the exceptional prospects for the use of air transport under future war conditions, an important modern problem is the long-range increase in freight capacity of the transport aviation pool and ensuring the capability of aircraft to operate from small dirt airfields. It is expedient, even now, to determine the basic axes for utilization of military transport aviation according to the plans of the central elements of the rear services. In order to ensure these shipments it is essential to have powerful central military transport aviation for transfer of troops and to determine beforehand the quantity of this aviation needed by the rear services at the beginning of a war. This will permit timely planning of the utilization of transport aviation of the center, the preparation at the necessary points of materiel stocks, materiel support, airfields, and other means ensuring the uninterrupted operation of transport aviation.

In line with this it is essential for elements of the rear services of the Armed Forces to unfold more broadly the work of resolving problems of airfield-engineering, materiel-technical, and special support of military transport aviation itself.

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The enumeration of problems in the preparation of the lines of communication and transport is not by any means limited to those indicated above. However, even those listed, show with sufficient conviction, the necessity of adopting decisive measures for further development of transport.

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The investigation of the problems of the organization of rear services support of the Armed Forces in a future war acquires entirely new significance at the present time.

First of all these questions arise.

Who in the Armed Forces must exercise control of all the means allotted by the State for the rear services support of missile troops, the ground troops, the air forces, and the navy?

What organs are needed in the system of the Armed Forces for the correct distribution and organization of rational utilization of the means of materiel support in the interests of the overall armed conflict?

In our opinion, the only correct resolution of these questions lies in the centralization of the entire matter of the rear area support of the Armed Forces. There are sufficient grounds for such a conclusion both from the scientific-theoretical viewpoint and from the experience gained from past wars.

In May 1919, at the height of the Civil War, V.I. Lenin wrote in The Draft Directive to the Central Committee on Military Unity:  
" -- the necessary condition for the success of this war is the unity of command of all detachments of the Red Army and the strictest centralization in the direction of all forces and resources of the socialist republics, specifically, of the entire apparatus of military supply, as well as railway transport, as the most important material factor of the war --" (Underlined by us - F.M.) (Collected Works, Volume 29, page 373).

The fulfilment of this demand of the leader of the revolution and founder of the Soviet Army permitted the utilization of the available extremely limited materiel resources of the country in the interests of protection of the young socialist republic during the period of the Civil War with maximum expediency and effectiveness.

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During the period of the Second World War, the General Headquarters of the Supreme High Command was in charge of all resources which the State Committee for Defense allotted for the conduct of armed conflict, carrying out its functions for the rear area support of the Armed Forces through a single central element of the rear services of the Ministry of Defense.

It follows that there is every basis to consider the strict centralization of the entire matter of rear area support of the Armed Forces as an objective necessity. Being guided by such a conclusion, it is appropriate to object to the authors who fight for the creation of a territorial system of materiel [2 or 3 words missing] support in place of the existing elements of the rear services, organized along the principle of channels of military command.

The completeness and efficacy of satisfying the materiel requirements of the Armed Forces in a future war will depend to a significant degree, as indicated above, on the prior accumulation of mobilization stocks, State materiel reserves, and the creation of mobilization capacities of industry corresponding with the proposed groupings of troops and the directions of the armed conflict which evolve. The correct fulfilment of these most important missions, connected with the plans for the development of the national economy of the country, is only in the power of central elements. It will be a drastic mistake if we permit decentralization in this matter among various elements having a limited sphere of activity, according to zones. The division of these missions according to types of Armed Forces is likewise intolerable.

Ensuring the stability of the network of communication lines, for use in wartime by various types of transport, in our country as well as in the countries of the Socialist Camp allied with us, may be achieved only under conditions of unified centralized planning and management. The fulfilment of this mission is tied in with large capital expenditures carried out in accordance with the general plan for the development of the national economy of our country and the Warsaw Pact. For this reason the impossibility of handing over these functions to any elements responsible only for one axis or one area of possible local operations of an operational or even of a strategic grouping of the Armed Forces, is completely apparent.

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We recommend, for the fulfilment of all tasks of organization and control of the rear, the materiel and medical support of fronts and other groupings of the Armed Forces, and the management of all types of transport, that there be a special element in the form of an organ of the Chief of the Rear Services of the Armed Forces in the General Headquarters of the Supreme High Command. The Chief of the Rear Services of the Armed Forces will be able to direct purposefully all the forces and means of rear services support in accordance with future strategic plans only under the condition that he be included in the General Headquarters complement.

The Staff of the Rear Services of the Armed Forces, the central supply, the supporting and transport elements, being under unified management of the Chief of the Rear Services of the Armed Forces, must, in their work, closely cooperate with the General Staff and be guided by its directives. The central elements of the rear services of the Armed Forces must be assigned the missions of organizing rear area support of operating fronts, the troops of PVO of the Country, missile large units of strategic designation and the utilization of production capabilities in the territory occupied by the troops, under the jurisdiction of the Supreme High Command. These elements will likewise carry out the functions of direct management of large units, units, and installations of the central element of the rear services of the Armed Forces deployed in the interior areas of the country, as well as in the prefrontal zone.

In the course of war there may be created high commands in various theaters or axes of military operations in the interests of achieving better coordination of operational efforts of operating front formations.

We consider that in the high command of a group of fronts, in this instance, it will be expedient to have an operational group of the Chief of the Rear Services of the Armed Forces. However, such a group cannot be looked upon as an intermediate supply echelon. The creation of additional supply levels always involves the enlargement of the rear services operations; the introduction of intermediate trans-loading points, in the end result, adversely affects the flexibility of the system of rear area support.

In our opinion, it is expedient to charge the operational group of the Chief of the Rear Services of the Armed Forces attached to the high commands of groups of fronts with rendering assistance to

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the fronts in the rear area support of troops, when the timely information of the Headquarters of the Rear Services of the Armed Forces, emanating from a concretely established situation, indicates a suddenly arising necessity to change the supply plans and carry out an interfrontal maneuver. Herein we allow for temporary subordination to the operational groups of the appropriate central bases created beforehand in the prefrontal zone. The operational groups of the Chief of the Rear Services of the Armed Forces in specific theaters of military operations may be formed also for the fulfilment of certain narrower missions (organization of use of production capacities, putting right the operation of the transportation network on occupied territory, etc.).

The activity of central organs of the rear services of the Armed Forces in a future war has not as yet been sufficiently explored, and it is essential to carry out appropriate work in this sphere. However, we are absolutely convinced that it is most expedient during the organization of rear area support to take as a basis a system which has proven itself: General Headquarters - front - army - troops. This system meets the requirements of centralization to the greatest degree, corresponds to the structural organization of the Armed Forces, and is relatively economical and efficient.

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